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will make this little book of very much more value to the novice than any other attempt to accomplish a similar purpose. Something over one hundred pages are devoted to a description of one hundred of our commonest butterflies, including not only a description of the butterfly, caterpillar and chrysalis, but a general account of the eggs, the habits, feeding plants and distribution of the species, giving the student thus a brief but comprehensive account of our knowledge of each different species. An appendix, which is fortunately illustrated by figures, gives directions to the student for collecting, rearing, preserving and studying specimens.

The two books together form a very valuable introduction into the study of New England insect life.

Cholera: Its Causes, Symptoms, Pathology and Treatment.

By ROBERT S. BARTHLOW, M. D., LL.D. Philadelphia, Lea Bros. & Co.

THIS little book, of 125 pages, is quite opportune in its publication at the present time, when the civilized world is once more agitated over the subject of cholera, and when we are believing that we have succeeded in so mastering the disease as to make the epidemics of former times impossible. Dr. Bartholow writes from an experience of his own through two epidemics, and his words are therefore more authoritative than they might be from one with no personal experience. The book deals with the history of the disease, with the various epidemics that have invaded Europe and America during the present century, and gives, also, a brief account of cholera in this country. It considers carefully the causes of the disease, and accepts the comma bacillus as the existing cause, though recognizing a large factor in personal predisposition toward the disease. The relation of the disease to drinking water is very satisfactorily shown by study of several epidemics in the world, and the details of their distribution through drinking water. The latter part of the book is more strictly for the use of physicians, being an account of the symptoms and treatment of the disease. A chapter on methods of prevention will, perhaps, from its practical standpoint, be the most valuable to the general reader, inasmuch as it is through preventive remedies, rather than through the treatment of the disease, that we are hoping at the present time to be able to stop the spread of this once dreaded scourge. The book is timely, well written and interesting.

Analytical Keys to the Genera and Species of the Water Algæ and the Desmidiæ of the United States. By ALFRED C. STOKES. 1893. 177 pp. 1 pl. 8 vo.

THIS book has been prepared to serve as a key to the genera and species of Algæ and Desmids described in Rev. Francis Wollé's monographs of the two groups. In the introduction Dr. Stokes puts in a strong plea for artificial keys. He is aware that specialists usually look down upon such aids to a knowledge of their subjects, but he rightly thinks that the keys aid the beginner over the hard places in the new study. While the key can only enable one to find the name of an object, this name is what every one must find before he can begin any intelligible discussion concerning it. "The object," he says, "cannot be referred to by speech or in writing until its name is known. What other workers in other parts of the world may have said about it, or done with it, cannot be known until its name is learned, as without the name all indexes are closed in all the books in all the libraries. The name is the clue to further knowledge, its starting point, even the hook upon which further information is to be hung. Whatever advanced scientists may say to the contrary, their first effort—perhaps it is an unconscious one—but their first real effort is to ascertain the name of

their new specimen. If it has none, they at once proceed to give it one. All the wild talk about the desirability of learning the name is wrong in principle. The name is, as everyone will cheerfully admit, only of secondary importance when compared with a study of habits or morphology, but it is as essential, since it is, and ever must be, the starting point for further investigations, at least on the part of the amateur." So the author has put much time into the making of these artificial keys, and there is no reason for not thinking that they will serve an excellent purpose in showing the way into the labyrinth of the Algæ and Desmids of the United States. J. F. J.

Human Embryology. By CHARLES SEDGWICK MINOT. New York, William Wood & Co. 1892. 815 p.

WE are extensive compilers of medical works in this country, but are far behind both England and Germany in biological text-books. This important work, by Professor Charles Sedgwick Minot, of the Harvard University Medical School, is actually the first of its kind which can be compared favorably with many similar works done abroad. It is written both for the student of medicine and of biology, and in the past few months since its appearance has taken its place in both these departments of science as a standard, based upon the higher modern conception of medicine as *applied biology*.

By the labors of Gegenbaur, Turner, Cunningham, the death knell of human anatomy taught *per se* has been sounded. It is safe to predict that not only in the brain, but in the muscles and viscera, all medical teaching of the near future will advance to the long ignored truth that man is not only a vertebrate, but a mammal and a descendant of the primates, and that a thoroughly intelligent conception of the human body can only be gained by comparison. Professor Minot will do much to further this progressive idea in medical instruction in this volume, which might very appropriately be called a text-book of vertebrate embryology. In human embryology we are, of course, limited to material obtained after death or by accident, and, considering these limitations, we are surprised by the vast amount of information which the author has brought together upon strictly human development, in addition to the ample treatment of the general features of development of lower types.

These results of ten years' original research and careful compilation from Kölliker, Hertwig, Balfour, Duval, his and others, are brought together in a volume of nine hundred pages which reflects the greatest credit both upon the author and the publisher. There are five hundred illustrations, many of them entirely original and altogether admirably printed. The work, as a whole, marks a great step forward, because it maintains a high level both in thoroughness and in form of publication, as the two essential elements of a successful work. It is difficult for any one not an embryologist to appreciate the labor represented in these pages. The progress of this branch of science has been so rapid, both in respect to fact and to theory, that in a work covering so much ground it is impossible to keep pace with fact and theory. It is this circumstance which should temper our criticism of some portions of the work which are not quite up to date.

The volume opens, appropriately, with a description of the uterus and a general outline of human development. The history of the ova and spermatozoa follows, concluding with the theories of sex. The author is well known as having early advanced the theory that the mature sexual elements differ in respect to sex, stated broadly, that the ovum is a female and the spermatozoan is a male cell. Now, this theory, with others of a similar character, has broken down under the criticisms of Weismann and researches of Hertwig, and has been generally

abandoned; yet the author, while fairly stating other views, decidedly leans toward his own—a position which would be perfectly proper in a memoir, but which is out of place in a student's text-book. It is the occasional outcrop of personal bias in the retention or defence of opinions with which the author's name has been associated, either as an originator or a supporter, which constitutes the most serious, in fact, the only serious, defect in this work. Other defects are of minor importance, or unavoidably spring from the immensely wide field covered. The writer of a text-book should ruthlessly sacrifice his most cherished theories if they do not accord with the latest research.

The next section is devoted to the three germ layers of the developing ovum, leading us to the embryo in the third section and the foetal membranes in the fourth. Through all these pages the author sustains his plan of maintaining a critical attitude, and, as far as possible, verifying his statements by his own observation. Each mammalian structure is introduced by a brief and clear statement of its mode of appearance in the fishes, amphibians and reptiles, rendering these chapters as valuable to the general as to the special student. Duval, in his recent monograph on the placenta of the Rodentia, speaks in high terms of Professor Minot's work upon the placenta, but differs with him in regard to the so-called ecto-placenta, holding that he has mistaken the ecto-placental columns and tubes for the uterine glands.

The latter half of the work is given to the general development of the foetus and the organology or special development of each of the systems and organs of the body. Here, again, the accuracy and breadth of treatment. The pages simply bristle with information upon every subject treated, giving a thoroughly encyclopædic character. The chapter upon the development of the brain alone is the most complete which has yet appeared, and is thoroughly up to date. One minor protest must be entered here, that is against the use of the Anglicized German term "aulages" for the beginnings of structures. As pointed out by Hurst, Parker and others, we have already an excellent term in the English "rudiment." A

"rudimental structure" is, properly speaking, an incipient structure, although often improperly used to designate a disappearing or "vestigial" structure.

The bibliography is very complete. The author shows the utmost readiness to give full acknowledgment to his authorities, and appreciates the importance of acquainting the student with the literature at every step. We know of no other work so full of references. Yet there is a matter which certainly should be remedied in a future edition of the work—the titles are referred to by volume numbers and pages, and not by date; this omission renders it very difficult to keep in mind the historic development of the subject. It is safe to say that four out of five persons in this country who will use this book will not be able to consult periodical files for the date.

In conclusion, we would repeat our high opinions of this work. It is certain to find its way into every medical and biological laboratory in the country, carrying with it the author's spirit of thoroughness in investigation and breadth of view in treatment, and cannot fail to exert a widespread influence upon American embryological research.

NOTES AND NEWS.

THE Congress of Evolutionists held the last week in September, in Memorial Art Palace Chicago, was a decided success and in every way a most satisfactory series of meetings. The Congress extended through three days—three sessions each day. The hall assigned to this Congress was well filled during all the sessions and crowded during some of them. After the opening address by B. F. Underwood, the Chairman, in which was sketched the progress of evolutionary thought, a paper on "Social Evolution and Social Duty," contributed by Herbert Spencer, was read, after which Edward P. Powell gave an address on "Constructive Evolution." During the Congress questions in "Biology" were treated by Dr. M. L. Holbrook, Dr. Edmund Montgomery and Rev. John C. Kimball. Edwin Hayden, Dr. Duren J. H. Ward, Mrs. Sara A. Underwood, Prof. T. J. Burrill, and Miss Mary Proctor (daughter of the great astronomer) paid tributes to "The Heroes of Evolution." Psychology as related to Evolu-

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By LESTER F. WARD.
AUTHOR OF "DYNAMIC SOCIOLOGY."
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THIS work is an original contribution to both psychology and sociology, and is, in fact, a combination of these two departments of science. It is the first attempt that has been made to show in a systematic and fundamental way the workings of mind in social phenomena. It has hitherto been customary with those who recognize the operations of law in human affairs to compare them with those taking place under the dominion of vital forces. Sociology has been made a department of biology. Society has been treated as a living organism, and the laws of production, distribution, and consumption have been likened to the processes of nutrition, circulation, and assimilation. Political economy has thus gained the name of "the dismal science" because it has been treated as mindless and soulless. Over against this purely physiological economy we now have fully set forth in this book a psychological economy, a philosophy of mind as the primary motive power of the world in all things above the level of animal life.

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